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A SYNOPTIC STUDY OF AN X-RAY NOVA IN OUTBURST (ADP 2000)

NASA Grant NAG5-10813

Grant
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Annual Report

For Period From 15 May 2001 through 14 March 2002

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This ADP grant funds and ongoing RXTE Cycle 6 and Cycle 7 project with the same title (i.e. "A Synoptic Study of an X-ray Nova in Outburst"). The ongoing RXTE project proposes an aggressive campaign of multiwavelength observations of the first X-ray nova that rises above an X-ray intensity of 1 Crab. The RXTE pointed X-ray observations are central to this observing campaign, which includes also very extensive optical and radio observations in both hemispheres. This is a Target of Opportunity program; that is, it is triggered by the RXTE Project Scientist only upon the appearance of such a bright X-ray nova.

In RXTE Cycle 6 (approximately 3/1/2001 to 2/28/2002) we were awarded 700 kiloseconds of RXTE observing time to study a bright X-ray nova; however, so far, none has appeared. Consequently, only a modest fraction of the grant funds have been expended thus far. Nevertheless, during the period covered by this grant, the PI and members of his team have completed three papers detailing further X-ray and optical studies of XTE J1550-564, and X-ray nova that was intensely studied during RXTE Cycles 1-3 by the PI and his team. The titles of these current papers, in which the PI explicitly acknowledges support of Grant NAG5-10813, are the following:

- "Evidence for Harmonic Relationships in the High Frequency QPOs of XTE J1550-564 and GRO J1655-40" R. Remillard, M. Muno, J. McClintock, and J. Orosz, 2002, ApJ, submitted.
- "Dynamical Evidence for a Black Hole in the Microquasar XTE J1550-564" J. Orosz, P. Groot, M. van der Klis, J. McClintock, M. Garcia, P. Zhao, R. Jain, C. Bailyn, and R. Remillard, 2002, ApJ, in press.
- "Chandra and RXTE observations of X-ray Novae", J. McClintock, 2002, to appear in the proceedings of the Jan van Paradijs Memorial Symposium, eds. E. van den Heuvel, L. Kaper, and E. Rol, ASP Conference Series.

For RXTE Cycle 7 (approximately 3/2/2002 to 2/28/2003) we again have been awarded 550 kiloseconds of RXTE observing, to study a bright X-ray nova. We are very hopeful that an X-ray nova will appear and our Target of Opportunity proposal will be triggered during this period, in which case we will require the full financial support of our grant.